REMARKS

This is responsive to the Office Action issued on August 5, 2003. By this response, claims 1, 3, 4 and 18 are amended, and claims 25-30 are newly presented. No new matter is added. Appropriate support can be found in, for example, page 9, 16 and 17. Claims 1-30 are now active for examination.

The Office Action dated August 5, 2003 allowed claims 16, 17, 23 and 24, but rejected claims 1, 4, 9, 10 and 18 under 35 U.S.C. §103(a) as being unpatentable over Suganuma et al. (U.S. Patent No. 6,029,512); claims 2 and 3 under 35 U.S.C. §103(a) as being unpatentable over Suganuma in view of Sievers et al. (U.S. Patent No. 4,379,990); and claims 11-15 under 35 U.S.C. §103(a) as being unpatentable over Suganuma in view of Sievers and Bertness (U.S. Patent No. 6,331,762). Claims 5-8 and 19-22 were objected to for depending on a rejected base claim, but would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims. The rejection and objection are respectfully traversed in view of the amendment and remarks presented herein.

THE OBVIOUSNESS REJECTIONS ARE TRAVERSED

Claims 1, 4, 9, 10 and 18 were rejected as being unpatentable over Suganuma. The obviousness rejection is respectfully traversed because Suganuma cannot support a prima facie case of obviousness.

Claim 1, as amended, recites:

> A method for evaluating operation of an alternator comprising:
>
> detecting a frequency component of an alternator output signal representative of a rectified output of the alternator;
>
> comparing the frequency component of the alternator output signal with a threshold frequency; and

evaluating operation of a rectifying circuit of the alternator based on a result of the comparing step.

Thus, in order to determination the operation status of a rectifying circuit of the alternator, a method of claim 1 detects the ripple frequency of a rectified alternator output, and compares the ripple frequency with a threshold frequency.

In rejecting claim 1, the Examiner asserted that features disclosed in Suganuma, if combined, teach every limitation of claim 1. Applicants respectfully disagree.

Suganuma is related to a device for detecting a belt-slipping condition of an alternator driven by an engine with a belt. The device detects the ripple frequency of a rectified output of the alternator, which represents the rotational speed of the alternator, and determines whether a belt-slipping condition occurs by comparing the ripple frequency with engine rpm. See Figs. 1 and 3A; col. 5, lns. 19-24 and 56-65.

However, as pointed out earlier, the device described in Suganuma is designed for detecting a belt-slipping condition, not the operation status of a rectifying circuit of the alternator. Therefore, Suganama does not teach "evaluating operation of a rectifying circuit of the alternator based on a result of the comparing step," as required by claim 1. Since Suganuma fails to teach every limitation of claim 1, Suganuma cannot support a prima facie case of obviousness. The obviousness rejection is respectfully traversed.

Claims 4 and 18 are directed to a system for evaluating an alternator, and include descriptions related to evaluating an operation status of a rectifying circuit of an alternator based on a comparison between a ripple frequency and a threshold frequency. As discussed relative to claim 1, Suganuma does not teach evaluation of a rectifying circuit of an alternator based on comparison of a ripple frequency and a threshold frequency. Therefore, the obviousness rejection of claims 4 and 18 are also untenable based on the same reasons discussed relative to

claim 1 as well as on their own merits. Claims 9 and 10 depend on claim 4, and incorporate every limitation thereof. Thus, the obviousness rejection of claims 9 and 10 is also untenable based on the same reasons discussed relative to claim 4 as well as on their own merits. Favorable reconsideration of claims 1, 4, 9, 10 and 18 is respectfully requested.

Claims 2 and 3 were rejected as being unpatentable over Suganuma in view of Sievers. Claims 2 and 3 depend on claim 1, and incorporate every limitation thereof. As discussed earlier, Suganuma fails to teach every limitation of claim 1. Sievers does not alleviate the deficiencies. Therefore, Suganuma and Sievers, even combined, do not teach every limitation of claims 2 and 3. Accordingly, claims 2 and 3 are patentable over Suganuma and Sievers. Favorable reconsideration of claims 2 and 3 is respectfully requested.

Claims 11-15 were rejected as being unpatentable over Suganuma in view of Sievers and Bertness. Claims 11-15 depend on claim 4, directly or indirectly, and incorporate every limitation thereof. As discussed relative to claim 4, Suganuma does not teach every limitation of claim 4. Sievers and Bertness also fail to teach determination of operation status of a rectifying circuit of an alternator based on a comparison of alternator ripple frequency and a threshold frequency. Therefore, the references, even combined, do not teach every limitation of claims 11-15 based on the same reasons discussed relative to claim 4 as well as on their own merits. The cited references accordingly cannot support a prima facie case of obviousness. The obviousness rejection of claims 11-15 is thus untenable and should be withdrawn. Favorable reconsideration of claims 11-15 is respectfully requested.

THE OBJECTION OF CLAIMS 5-8 AD 19-22 IS ADDRESSED

Claims 5-8 and 19-22 were objected to for depending on a rejected base claim, but would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims. Claims 5-8 and 19-22, directly or indirectly, depend on claims 1 and 4, respectively. As discussed earlier, claims 1 and 4 are patentable over the references of record. Therefore, claims 5-8 and 19-22 are also patentable.

NEW CLAIMS 25-30 ARE PATENTABLE

By this Response, claims 25-30 are newly added. The claims are directed to method and apparatus for determining the health of an alternator based on a ripple frequency of an alternator output obtained from terminals of a battery coupled to the alternator.

As discussed earlier, Suganuma is related to a device for detecting a belt-slipping condition of an alternator driven by an engine with a belt. The device detects the ripple frequency of a rectified output of the alternator, which represents the rotational speed of the alternator, and determines whether a belt-slipping condition occurs by comparing the ripple frequency with engine rpm. Suganuma specifically points out that the determination of a belt-slipping condition should be conducted in the condition where the battery is isolated from the alternator (see Fig. 1 and col. 6, lns. 23-26). Therefore, Suganuma not only fails to obtain alternator output signal from battery terminals to determine the operation of the alternator, Suganuma also teaches away from obtaining alternator output from battery terminals. Therefore, Suganuma cannot be combined with other references that suggest obtaining alternator output from battery terminals.

Other references of record, even combined, do not teach every limitation of claims 25-30. It is believed that the new claims are patentable over the references of record. Favorable consideration of claims 25-30 is respectfully requested.

CONCLUSION

Therefore, the present application claims subject matter patentable over the references of record and is in condition for allowance. Favorable consideration is respectfully requested. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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Recognition under 37 CFR §10.9(b)

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